

# Surfactant Flushing

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# Flushing Works\*

- >95% of mass in 2-3 weeks
- Doesn't reach MCLs--but puts them in reach for other technologies
- Great in combination with “polishing” step, MNA, ENA, ISCO, etc.



•most of the time; low permeabilites, as in tight clays, are not economical

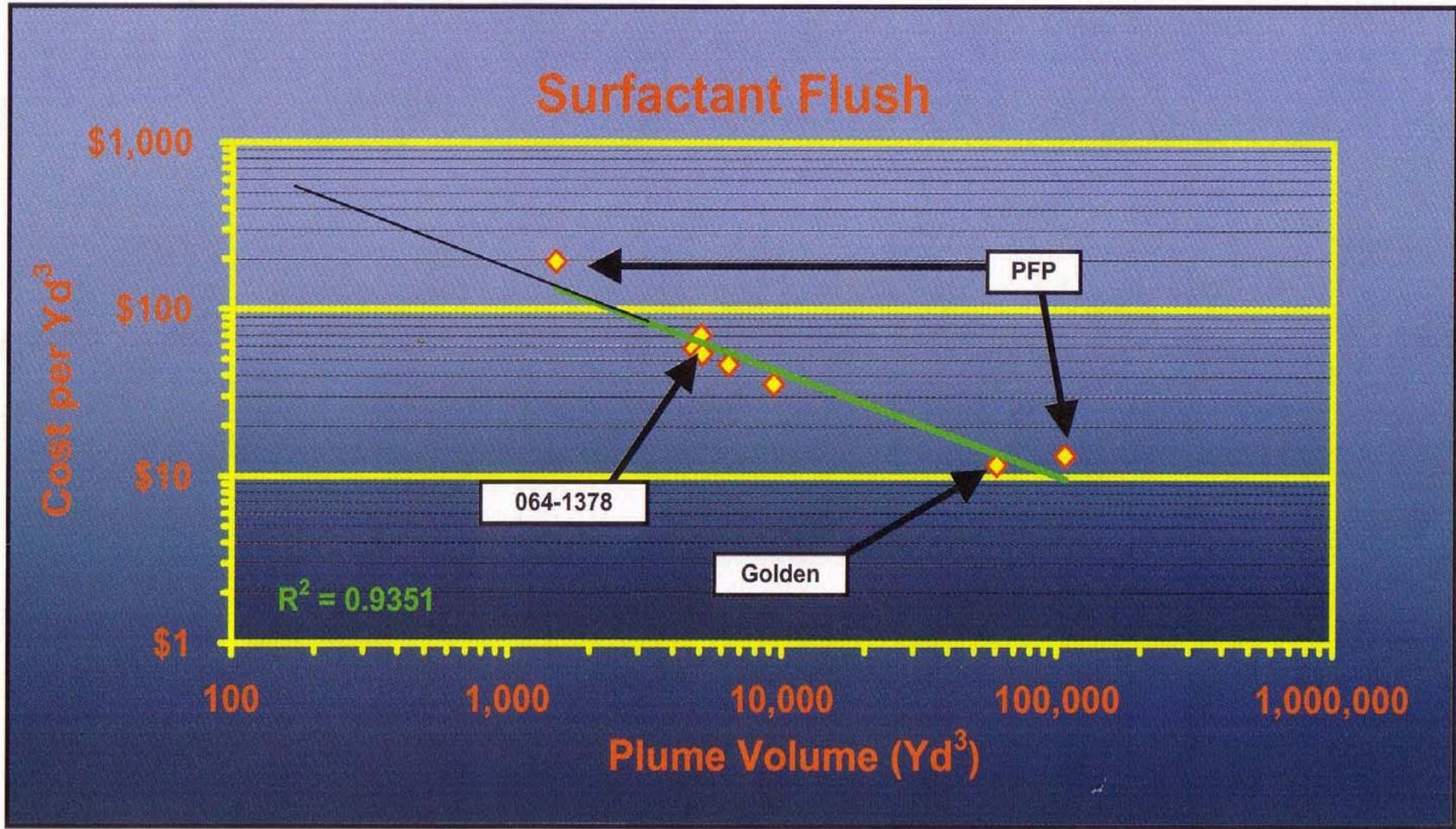


# Will work as well for DNAPLS as it has for LNAPLS

- Remember vertical migration occurs with LNAPLS, also
- Mobilization must be an option for economics
- Usually not a serious problem
- Multiple options for addressing when must
  - Neutral buoyancy
  - Well spacings/capture zone
  - Gradient approach (solubilize as released)



# Cost is Central\*

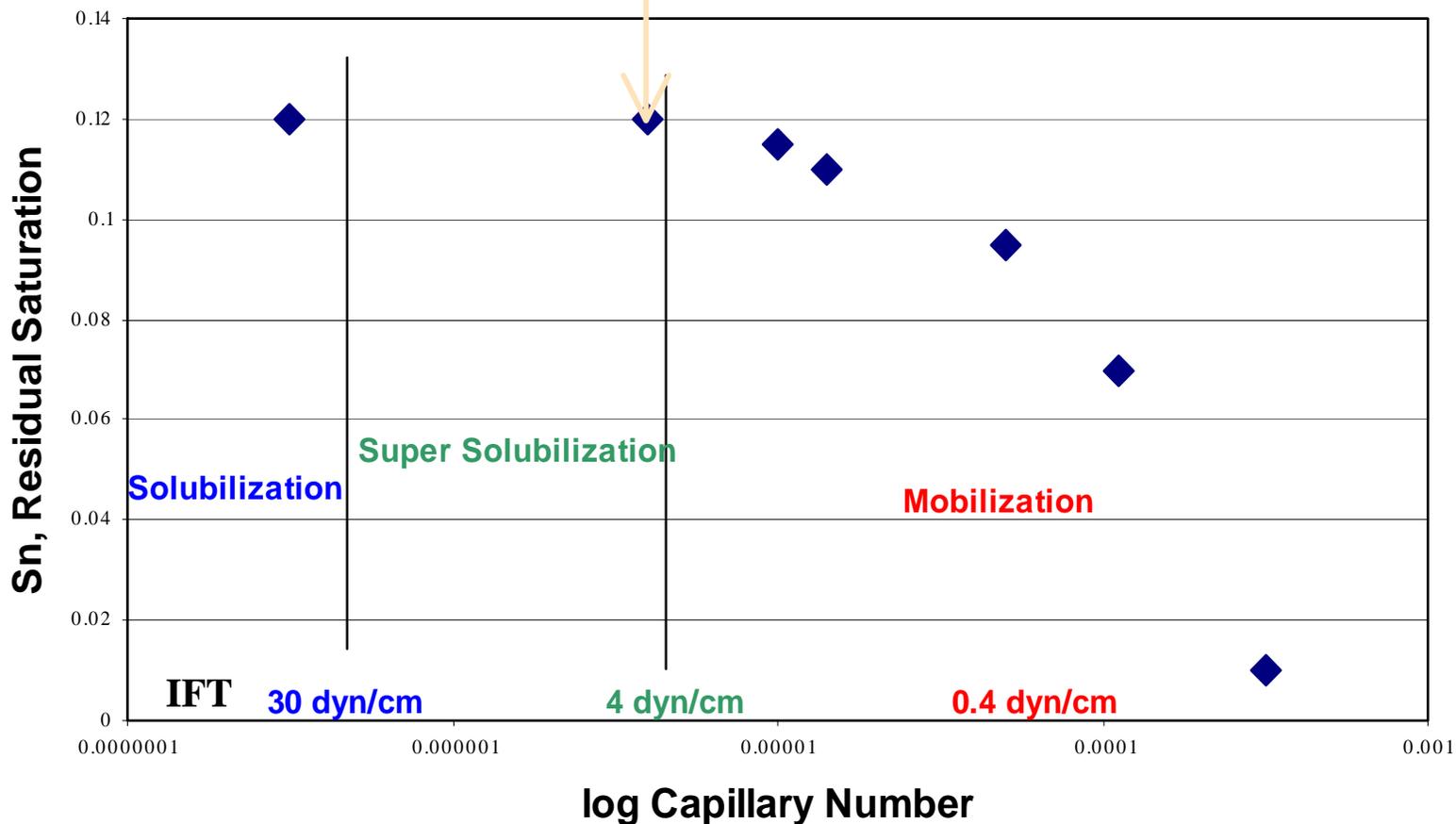


\*plot from Oklahoma Corporation Commission



# Supersolubilization

High efficiency without uncontrolled mobilization



# Gradient Approach

Start Here solubilize as you mobilize

